ABSTRACT OF THE DISCLOSURE

The present invention is an apparatus and process for oxidizing mercaptans in a preferably kerosene stream. By using a catalyst promoter, sufficient separation of hydrocarbon and aqueous alkali occurs in the reactor vessel to obviate the need for a settling tank. Hence, the sweetened kerosene can be withdrawn from the reactor vessel and sent directly to a residual alkali removal unit such as a sand filter vessel or to a water wash vessel if jet grade fuel is desired. In an embodiment, the reactor vessel used for this purpose includes a reaction section and a separation section in the same reactor vessel and an aqueous alkali outlet and a sweetened hydrocarbon outlet in the separation section.